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29 April 1965
Copy # 1

DECLASS REVIEW by NIMA/DOD

MEMORANDUM FOR: Chief, Resources Division, ORR

ATTENTION : [REDACTED] 25X1A
THROUGH : Chief, Requirements Branch, Reconnaissance Group, CGS
FROM : Chief, Photographic Intelligence Division, CIA
SUBJECT : Major Chemical Installations, North Vietnam
REFERENCES : (1) ORR Requirement No. C-RR5-82,438
(2) CIA/PID Project No. 30521-5

1. This memorandum is in response to the above mentioned requirement which requested a detailed study, to include annotated photographic enlargements, of the three major chemical plants in North Vietnam: the Viet Tri Chemical Plant, the Lam Thao Superphosphate Plant, and the Bac Giang Nitrogen Fertilizer Plant. Information as requested concerning these plants is presented in the following sections.

2. Viet Tri Chemical Plant

a. This plant is located in an industrial complex, near the confluence of the Riviere Rouge and the Riviere Claire, northwest of Hanoi, at Viet Tri. The geographic coordinates of this plant are 21 10 OON - 105 25 10E.

The Chemical Plant is a fairly small fence enclosed facility, with approximately twenty-five buildings and ten tanks visible. Heat and power are obtained from a large thermal power plant located nearby. Water supplies are apparently obtained from a treating plant within the adjacent pulp and paper mill.

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b. Two photo enlargements are provided for this installation, CIA/PID/IB-P-439/65 dated [REDACTED] from the latest mission and CIA/PID/IB-P-440/65 dated [REDACTED] from the earliest mission of good quality which covered this plant.

c. Since most facilities are enclosed and a great variety of functions are performed, photographic intelligence alone does not provide enough information to adequately analyze the various components within the chemical

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section of this complex. However, by studying ground photos and other collateral information in conjunction with aerial photography, partial analysis of the various components within the plant can be made. The Viet Tri Chemical Plant is outlined on the overlay to CIA/PID/IB-P-439/65, and nearby features of interest as well as various components of the chemical plant itself, are annotated. Analysis of these annotations is presented under the number corresponding to that on the overlay.

- (1) Probable sugar refinery
- (2) Large thermal power plant and associated facilities
- (3) Pulp and paper mill
- (4) Docking facility with open storage area
- (5) Warehousing and packaging areas
- (6) Brine mixing and storage tanks
- (7) Probable chlorine-caustic soda cell building
- (8) Possible caustic soda concentration and purification area
- (9) Administration Building
- (10) General purpose shop-warehouse buildings
- (11) Probable polyvinyl production area
- (12) Area of unidentified processing including one large building, two medium sized shop-warehouse type buildings, and smaller vented probable processing buildings.
- (13) Waste disposal area

No facilities can be identified at this site, as suitable for the production of calcium carbide, soda ash, or sulfuric acid.

d. Construction Status and Level of Operation:

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25X1D Additions to the Viet Tri Chemical Plant between [REDACTED] and [REDACTED] of this year have included four small buildings within the production area, the large administration building (9) and several shops and warehouses (10) to the west of the administration building. Quite a large number of sheds to both the north and south of the production area have been removed. These were probably temporary buildings used for workers housing and as shops during and immediately following construction of this industrial complex. No facilities are presently under construction.

The level of operation of the chemical section of this complex is difficult to determine. However, that the plant is probably in operation is indicated by: white staining in the waste disposal area, general well maintained appearance of the site and open stockpiles of materials. Also, fumes from the smokestack at the nearby pulp and paper mill shows that it is active and possibly suggests that this plant is furnishing chemicals necessary for its operation. The large heat and power facility which is tied in with all the neighboring industries is also in operation.

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3. Lam Thao Superphosphate Plant

a. This chemical fertilizer plant is located on the Rivere Rouge near Phu Tho almost directly west of Viet Tri at the approximate coordinates of 21 20N - 105 17E.

This is a large modern appearing plant, apparently capable of processing considerable quantities of material. A small boiler house is present, however, no power generating facilities are apparent. Water is supplied from a large pumping station located downstream.

25X1D b. Comparative photo enlargements are included for this plant, CIA/PID/
25X1D IB-P-441/65 is from coverage in [REDACTED] while CIA/PID/IB-P-442/65 is from the earliest good quality coverage in [REDACTED]. A photo enlargement (CIA/PID/IB-P-465/65) of the superphosphate plant at Ft. Bayard (Chanch'ang) is also provided for comparison.

c. The Lam Thao Superphosphate Plant is outlined on the overlay to CIA/PID/IB-P-441/65, and individual components, as well as associated facilities are annotated. These annotated items are identified and described under the number corresponding to that on the overlay sheet.

- (1) Piles of waste material from sulfide roasting process
- (2) Sulfide ore crushing and processing building (rail served)
- (3) Roaster section
- (4) Sulphuric acid plant
- (5) Acid tanks
- (6) Phosphate ore crushing and processing building (rail served)
- (7) Superphosphate production section and warehouse (mixing and den sections at south end)
- (8) Area of administration-type buildings
- (9) Boilerhouse
- (10) Possible laboratory and testing building
- (11) General purpose housing-administration buildings
- (12) Warehouse-production building (rail served) with bulk loading facilities
- (13) Unidentified processing area
- (14) Separately secured unidentified processing area with two buried tanks and a water tower.

Comparison of this plant with the superphosphate plant near Ft. Bayard reveals only minor similarity in general layout. The production facilities of the two plants are of comparable size, however, the Vietnamese plant is in general more neatly and spaciouly laid out.

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d. Construction Status and Level of Operation

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No new production facilities have been added at this plant since the earliest usable mission over this site in [REDACTED]. The only apparent changes have been the completion of two administration type buildings outside the fenced area and the removal of a number of temporary buildings which were probably for housing and storage during construction. No evidence of new construction activity was apparent on coverage of [REDACTED]. [REDACTED] production had apparently just recently begun and has continued since then as indicated by the rapidly growing dumps of waste material from the sulfide roasting process. The level of operation at this plant appears moderate on photography of [REDACTED] as indicated by the following: fumes from the boilerhouse stack and from vents on the superphosphate production building, as well as the presence of a rail car on the waste dump and four rail cars on a siding in the acid tank area. On previous missions many more rail cars have been observed.

4. Bac Giang Nitrogen Fertilizer Plant

a. This large nitrogen fertilizer plant is under construction northeast of Hanoi near Phu Lang Thuong at the approximate coordinates 21 18N - 106 12E. The Bac Giang plant is comparable in size or slightly larger than similar Chinese nitrogen fertilizer plants at Canton and K'ai-yuan, which were examined in the course of this study. A thermal power plant is present at this site. Water is obtained from a nearby stream after being treated in an adjacent water treatment plant which is already in operation.

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b. As per your request, recent photography [REDACTED] 25X1D is compared with [REDACTED] photography in this memorandum. Enlargement CIA/PID/IB-P-443/65 is the enlargement from [REDACTED] of this year and CIA/PID/IB-P-444/65 is from a mission flown in [REDACTED].

As per your request, photographic enlargements of Chinese nitrogen fertilizer plants at K'ai-yuan (CIA/PID/IB-P-466/65) and Canton (Kuang-chou) (CIA/PID/IB-P-467/65) are included with this memorandum. We have also included an enlargement of a chemical plant at Tsingtao (CIA/PID/IB-P-464/65). This facility may produce soda ash and is the only plant in this vicinity which appears capable of producing ammonium chloride.

c. The Bac Giang Nitrogen Fertilizer Plant is outlined on the overlay to CIA/PID/IB-P-443/65, and individual components and adjacent associated facilities are annotated. Where possible these locations are identified and described, under the number corresponding to that on the overlay. It is felt that this plant is near enough completion to give a fairly accurate description of function of most units at the site.

- (1) Pumping station
- (2) Water treatment plant

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- (3) Coal processing building with adjacent open storage area
- (4) Thermal power plant
- (5) Gas plant
- (6) Gas holders
- (7) Gas scrubbers and contact ovens
- (8) Possible nitric acid building
- (9) Compressor and synthesis building
- (10) Unidentified buildings
- (11) One large and one small tower for the disposal of waste gases
- (12) Ammonium nitrate production area with two prilling towers and a conveyor leading to a still incomplete processing and warehouse building (rail served)
- (13) Two general purpose warehouse-shop buildings (rail served)
- (14) Large warehouse (rail served)
- (15) Unidentified processing building
- (16) Large unidentified buildings
- (17) Area of small shop and warehouse buildings
- (18) Administration type buildings
- (19) Water treatment area
- (20) Waste disposal and pumping facility
- (21) Docking facility with conveyor leading to coal storage area (under construction)

Production facilities for ammonium nitrate are presently under construction (item 12). The nitric acid necessary for this process may possibly be produced at the location of annotation (8) on the overlay.

As of this time no facilities for sulfuric acid production have been constructed; however, the open area near annotation (11) may be reserved for a future sulfuric acid plant. Until a sulfuric acid plant is present, this plant would not produce ammonium sulfate.

Some type of chemical process is under construction at areas annotated (15) and (16). At the present time, no firm identification can be made on any parts of this section. However, based on very minor clues, such as the possible well drilling operation immediately to the southeast of the fenced area which may be for a source of brine; this section could possibly be for the production of soda ash and other brine based chemicals. The two well ventilated buildings at annotation 16 have characteristics similar to electrolytic cell buildings. If such analysis is correct, ammonium chloride might be produced.

d. Construction Status and Level of Operation

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Construction has continued at a steady pace between [REDACTED] and [REDACTED]. All structures annotated (1) through (9) were under construction in [REDACTED] and now appear to be basically complete, with the exception of above ground pipelines and tank storage, both of which are still almost completely absent from the entire plant. Two new buildings have been erected at (10), a small tower has been added near (11), and

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construction is now in progress on a warehouse, conveyor system and two small processing buildings near the prilling towers, which were under construction in [REDACTED] at (12). No apparent changes have occurred at warehouses annotated (13) and (14), which were complete on photography of [REDACTED]. The main storage and processing buildings at (15), (16), and (17) show little or no change on the recent coverage, however, further construction on tanks, pipelines and smaller buildings is now taking place in this area. The two administration buildings at (18) have been completed during this period. Further construction has taken place on the water treatment and probable waste disposal system at (19) and (20). The docking and conveyor system at (21), presently under construction had not been started in [REDACTED].

From a comparative study of the rate of progress of construction at this site since the inception of the project in [REDACTED] it appears unlikely that it will be complete this year. However, certain specific facilities within this site, such as the thermal power plant, may be ready for operation at an earlier date.

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5. The photo analyst assigned to this project was [REDACTED] who may be contacted on extension 2546 should any questions arise concerning this memorandum. This memorandum and attachments complete the requirement.

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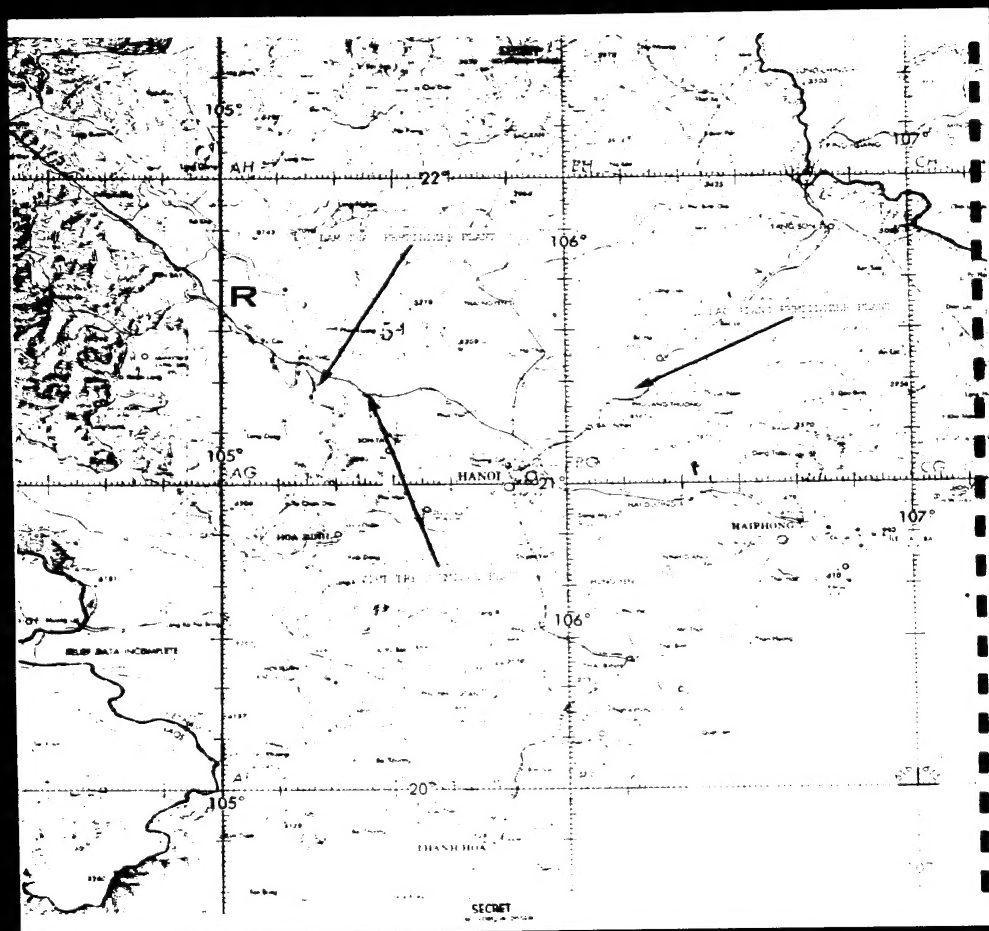
Enclosures:

- 1 Annotated Map :
CIA/PID/IB-P-438/65
- 3 Annotated Photos, w/Overlay
CIA/PID/IB-P-439/65, P-441/65, and P-443/65
- 7 Annotated Photos
CIA/PID/IB-P-440/65, P-442/65, P-444/65, and
P-464/65 thru P-467/65

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MAJOR
CHEMICAL INSTALLATIONS
NORTH VIETNAM

PREPARED BY - CHEMICAL SECTION, INDUSTRIAL BRANCH,
PHOTOGRAPHIC INTELLIGENCE DIVISION, CIA



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